

1.0 PURPOSE AND NEED FOR SECOND F-22A OPERATIONAL WING BEDDOWN

In 1985, Congress determined that a need existed to provide the United States Air Force (Air Force) with a next-generation fighter to replace and supplement the aging F-15C and newer F-15E fleet and to ensure air dominance well into the 21st century. Congress also determined that the F-22A would meet this need. The Air Force now proposes to establish (beddown) the Second Operational Wing of F-22A Raptors at Elmendorf Air Force Base (AFB), Alaska to support the F-22A program.

The purpose of the Elmendorf AFB-based F-22A Operational Wing is to have national assets positioned to rapidly respond to the directives of the President and Secretary of Defense and to provide the Air Force with the capability to meet mission responsibilities that include rapid worldwide deployment. This Environmental Assessment (EA) tiers from the Initial F-22 Operational Wing Beddown Environmental Impact Statement (EIS) (Air Force 2001a). Elmendorf AFB best meets the need and F-22A current operational requirements of the five original bases considered in that EIS. Elmendorf AFB has an F-15C mission and an F-15E mission with the organizational structure and basic infrastructure to support fighter aircraft. Elmendorf AFB has operational air superiority aircraft, missions, and training airspace to meet the needs for an F-22A Operational Wing.

The Elmendorf AFB beddown would involve basing 36 F-22A Primary Aircraft Inventory (PAI) and 4 Backup Aircraft Inventory (BAI); constructing new facilities, modifying existing Elmendorf AFB facilities; changing personnel; and conducting flight training operations in existing Alaskan Special Use Airspace (SUA).

This EA analyzes the potential environmental consequences associated with the F-22A Operational Wing beddown according to the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) Regulation of 1978, and 32 Code of Federal Regulations (CFR) Part 989, titled the Environmental Impact Analysis Process. 32 CFR Part 989 addresses the implementation of NEPA and directs Air Force officials to consider the environmental consequences of any proposal as part of the decision-making process.



ELMENDORF AFB IS THE PROPOSED LOCATION FOR THE SECOND OPERATIONAL WING OF F-22A FIGHTER AIRCRAFT.



THE PROPOSED ACTION IS TO LOCATE OR BEDDOWN THE NEXT GENERATION F-22A RAPTOR IN ALASKA.

1.1 BACKGROUND

The F-22A Raptor is designed to ensure that America's armed forces retain air dominance. This means complete control of the airspace over an area of conflict, thereby allowing freedom to attack and freedom from attack at all times and places for the full spectrum of military operations. Air dominance provides the ability to defend American and Allied forces from enemy attack and to attack air and ground adversary forces without hindrance from enemy

aircraft. During the initial phases of deployment into an area of conflict, the first aircraft to arrive are the most vulnerable because they face the entire warfighting capability of an adversary. The F-22A's state-of-the-art technology, advanced tactics, and skilled aircrew will ensure air dominance from the outset of such situations. The F-22A has the stealth, speed, and maneuverability to overcome adversary improvements in air defenses and ensure air dominance over any battlefield.

The F-22A aircraft is a 21st century fighter designed to replace and supplement F-15C and F-15E aircraft which can be targeted by enemy air defenses at increasingly greater distances. The Air Force priority is to be equipped, trained, and ready to fulfill its combat missions as directed by the President and Secretary of Defense.

1.1.1 AIRCRAFT CHARACTERISTICS OF THE F-15C AND F-15E



THE F-15C IS ARMED WITH THE AIM-7M SPARROW OR AIM-120 ADVANCED MEDIUM-RANGE AIR-TO-AIR MISSILES, THE AIM-9M SIDEWINDER, AND A 20-MILLIMETER CANNON.

The F-15C Eagle, an air superiority fighter, was developed in 1965 and attained initial operational capability in 1976. The aircraft was developed to arrive early during a battle and control access to the battle from the sky. These missions were to be performed frequently for short durations, with rapid airfield maintenance and quick turnaround times. During Desert Storm, the F-15C aircraft flew longer missions, refueled in flight, and provided air superiority over the battlefield to engage enemy aircraft while escorting other aircraft.

The F-15E Strike Eagle, a modern all-weather strike fighter, is designed for long-range interdiction of enemy ground targets deep behind enemy lines. The F-15E Strike Eagle attained initial operational capability in 1989. The F-15E is a derivative of the two-seat F-15B with the second seat equipped for a Weapon Systems Officer to work air-to-ground avionics. The F-15E is fitted with two conformal fuel tanks that hug the fuselage and produce lower drag than conventional fuel tanks. During Desert Storm, the Strike Eagle carried out deep strikes against high-value targets and provided close air support for coalition troops.



THE F-15E STRIKE EAGLE HAS BOTH AIR-TO-AIR AND AIR-TO-GROUND CAPABILITIES, INCLUDING LASER-GUIDED AIR-TO-GROUND MUNITIONS.

The F-15C and F-15E routinely operate at medium altitudes (20,000 to 30,000 feet above mean sea level [MSL]) and fly missions up to 2 hours in duration. Powered by two engines that each provides from 18,000 to 29,000 pounds of thrust, the F-15C and F-15E can achieve speeds for a short period of time in the 1,600 miles per hour range. The F-15C and the F-15E use power settings ranging from above 90 percent to afterburner use. F-15C and F-15E aircraft generally use afterburner with increased fuel consumption to achieve supersonic speeds. Each F-15C and F-15E is 64 feet long, with a wingspan of 43 feet, and is over 18 feet in height.

1.1.2 AIRCRAFT CHARACTERISTICS OF THE F-22A

The F-22A is designed to replace and supplement the F-15C and F-15E fleets. The F-22A offers a unique combination of capabilities that make it less detectable, faster, more fuel efficient, more maneuverable, and more reliable than the F-15C or the F-15E. These capabilities enable the

F-22A to reach the conflict faster, reduce danger to pilots, and provide more air power to the combat commander. The enhanced capabilities include the following:

- **Stealth:** State-of-the-art design and radar-absorbent composite materials make the F-22A much harder to detect by radar than conventional aircraft of similar size.
- **Supersonic Speed:** The F-22A can sustain supersonic speeds without the use of afterburners. This supercruise capability permits the F-22A to operate longer at higher speeds and with less vulnerability.
- **Increased Maneuverability:** The F-22A design, coupled with the ability to direct engine thrust, permits the pilot to turn more rapidly, maintain better control, and evade missile threats better than other fighter aircraft.
- **Advanced Electronics:** Highly sophisticated avionics systems are integrated throughout the F-22A to provide the pilot information from many sources and produce a clear, understandable picture of the combat situation.
- **Maintainability, Sustainability, Reliability, and Responsiveness:** Reliability and mission-readiness of the F-22A is enhanced with computerized self-tests of all systems and other maintenance features. The F-22A requires fewer personnel and equipment for maintenance and deployment compared to the F-15C or the F-15E.

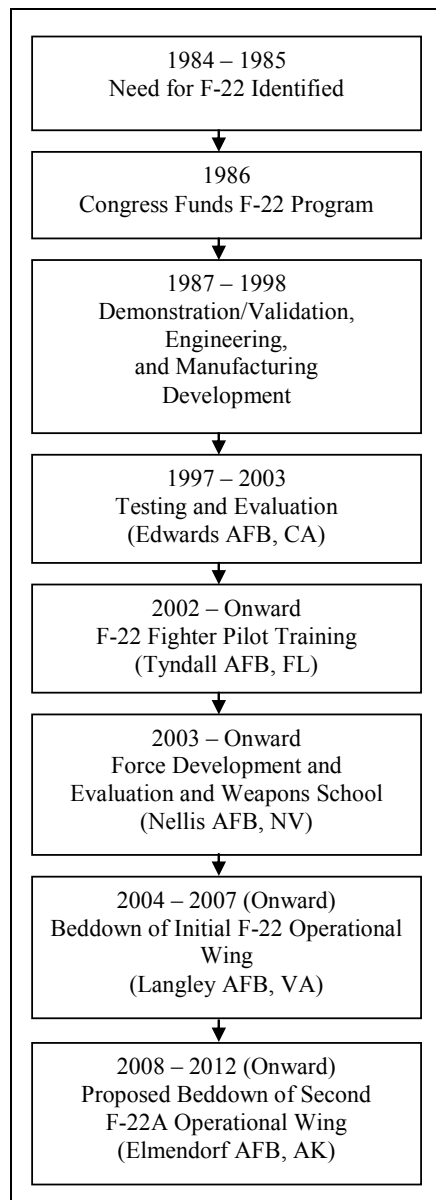
The F-22A Raptor is a single-seat, all-weather, multipurpose fighter capable of both air-to-air and air-to-ground missions. Powered by two 35,000-pound thrust-class engines, the F-22A routinely operates at higher altitudes (above 30,000 feet MSL) and higher speeds than the F-15C or the F-15E. Its thrust-to-weight ratio permits the F-22A to achieve speeds needed for air-to-air combat while using lower power settings than an F-15C. F-22A characteristics make the aircraft able to launch sophisticated weapons at higher speeds and from greater distances than possible for the F-15E. The F-22A is approximately 62 feet long, with a wingspan of 44 feet, and a height of more than 16 feet.



THE F-22A HAS ENHANCED STEALTH, SPEED, MANEUVERABILITY, ELECTRONICS, AND MAINTAINABILITY.

The F-22A can carry six radar-guided AIM-120 Advanced Medium-Range Air-to-Air Missiles, two heat-seeking AIM-9 Sidewinder short-range missiles, and has a 20-millimeter multi-barrel cannon for air-to-air engagements. The F-22A has the capability to carry a variety of conventional and Long Range Stand-Off Weapons (LRSOW) for air-to-ground ordnance delivery. When performing air-to-ground missions, the F-22A can internally carry two Global Positioning System-aided 1,000-pound Joint Direct Attack Munition (JDAM) in place of two AIM-120s and two AIM-9 missiles. The Small Diameter Bomb (SDB) (Guided Bomb Unit [GBU]-39/B) is designed to provide the F-22A with multiple targeting capabilities. Training in Alaskan SUA would not include release of live air-to-air missiles. Air-to-ground training with LRSOW would include flying to launch profiles and speeds at high altitude with simulated launches where no LRSOW munitions would be released. Existing conventional ranges would be used for munitions training. Release profiles, altitudes, and speeds would be limited to keep weapon safety footprints within established ranges.

1.1.3 F-22A DEVELOPMENT PROGRAM



The requirement leading to development of the F-22A was identified through the process described in Air Force Instruction (AFI) 10-601, *Mission Needs and Operational Requirements Guidance and Procedures*. During the early 1980s, the Air Force assessed its tactical capabilities against projected threats and determined that a mission deficiency would emerge in the near future. Such a deficiency could jeopardize the ability of the United States (U.S.) to ensure that its forces have the freedom of action to conduct operations against opposing forces. By 1984, the Air Force had defined the requirements for an advanced tactical fighter, presented in a *Statement of Operational Need*. The first F-22A aircraft flew in 1997. Several designations have been used for the F-22A throughout the development of the aircraft. During initial experimental testing it was the XF-22. Then, the F-22 designation emphasized the air-superiority function. For a period, the designation F/A-22 was used to highlight the aircraft's attack capability. The F-22A is basically the same airframe under all these designations.

F-22A Force Development and Evaluation (FDE) flight activities began in 2003 at Nellis AFB, Nevada, after completion of Initial Operational Test and Evaluation (IOT&E) at Edwards AFB, California. FDE, like IOT&E, is a part of the overall Operational Test and Evaluation program for the F-22A. While IOT&E ensures that the F-22A meets mandatory operational capabilities, FDE tests and evaluates the aircraft and its systems to ensure that it continues to meet operational requirements for as long as the aircraft is used. FDE also explores the use of new flight techniques and tactics and develops F-22A training programs. By testing capabilities of an aircraft in tactical situations, including air-to-air, air-to-ground, and electronic combat operations, FDE provides essential input on tactics to the

Weapons School and operational units. F-22A tactics developed at FDE become the training activities for the Langley AFB Initial Operational Wing, the proposed Elmendorf AFB Second Operational Wing, and future F-22A operational squadrons.

In 2003, the Air Education and Training Command began qualifying F-22A fighter pilots to fly the F-22A at Tyndall AFB. The Air Education and Training Command has advanced pilot training squadrons at Tyndall AFB, Florida. Members of these squadrons complete advanced F-22A pilot training to successfully perform the academic work and develop flying skills necessary to achieve instructor status. A number of these new instructor pilots are scheduled to be assigned to operational units that will receive F-22As, including the proposed Second Operational Wing at Elmendorf AFB.

1.1.4 ELMENDORF AFB

Elmendorf AFB, located near Anchorage, Alaska, is part of the Pacific Air Forces (PACAF). Elmendorf AFB is the home of the Alaskan Command, 11th Air Force, Alaskan North American Air Defense region, and the 3rd Wing (3 WG). The 3 WG encompasses two squadrons of F-15Cs (42 aircraft), 18 F-15E aircraft, 16 C-130 transports, and a limited number of C-12 and E-3 aircraft. Eight C-17 transports will be beddown in 2007 (Air Force 2004a). As depicted in the insert on Figure 1.1-1, Elmendorf AFB shares a boundary with the Army's Fort Richardson. Elmendorf AFB covers 13,455 acres, with the improved areas consisting of 3,713 acres, including a 10,000-foot main runway and a 7,500-foot cross-runway. Under the Proposed Action, substantial new construction would be needed to meet requirements for two F-22A operational squadrons. Three construction options are presented in Section 2.1.



ELMENDORF AFB HAS HAD MULTIPLE SQUADRONS AT DIFFERENT TIMES DURING ITS HISTORY.

Throughout its history, Elmendorf AFB has based large numbers of aircraft to support World War II, Korean War, Vietnam War, Cold War, Gulf War, and Global War on Terror. The F-22A would be a natural continuation of aircraft based to support the U.S. worldwide interests.

Elmendorf AFB has extensive SUA for training (Figure 1.1-2). Training airspace for Elmendorf AFB aircraft includes large overland Military Operations Areas (MOAs) which provide training airspace for the F-15Cs and F-15Es as well as other aircraft. Many of these MOAs permit supersonic flight and allow the use of chaff and flares for defensive training (refer to Section 4.1.2). Existing Army Training Ranges provide for local air-to-ground training for F-15E aircraft. The Air Force expects that the F-22A would use the existing SUA and Army Ranges currently used by Elmendorf AFB in a manner similar to the F-15Cs and F-15Es currently based there. No airspace modifications are proposed for the F-22A. Chapter 2.0 of this EA describes the F-22A missions and training.

1.2 PURPOSE OF F-22A OPERATIONAL WING BEDDOWN AT ELMENDORF AFB

The overall mission of the Air Force is defense of the U.S. and fulfillment of the directives of the President and Secretary of Defense. To meet these requirements, the Air Force must develop and operate combat and support aircraft and train personnel. The purpose of the Elmendorf AFB-based F-22A Operational Wing is to be positioned to rapidly respond to directives of the President and Secretary of Defense. As is the case of the eastern U.S.-based First F-22A Operational Wing at Langley AFB, the westernmost U.S. basing of the Second F-22A Operational Wing at Elmendorf AFB provides the Air Force with the capability to meet its mission responsibilities that include rapid worldwide deployment.

The Air Force faces two challenges to providing air dominance with its current fleet of fighter aircraft. First, other nations continuously improve their aerial warfare capability by fielding newer, faster, more maneuverable aircraft, such as the MiG-29, Su-35, Rafale, Gripen, and Eurofighter. Second, potential adversaries have added sophisticated air defenses built around surface-to-air missiles that can target F-15C and F-15E aircraft more accurately and at greater distances than in the past. The F-22A has the stealth, speed, and maneuverability to overcome these challenges and ensure air dominance over any battlefield.

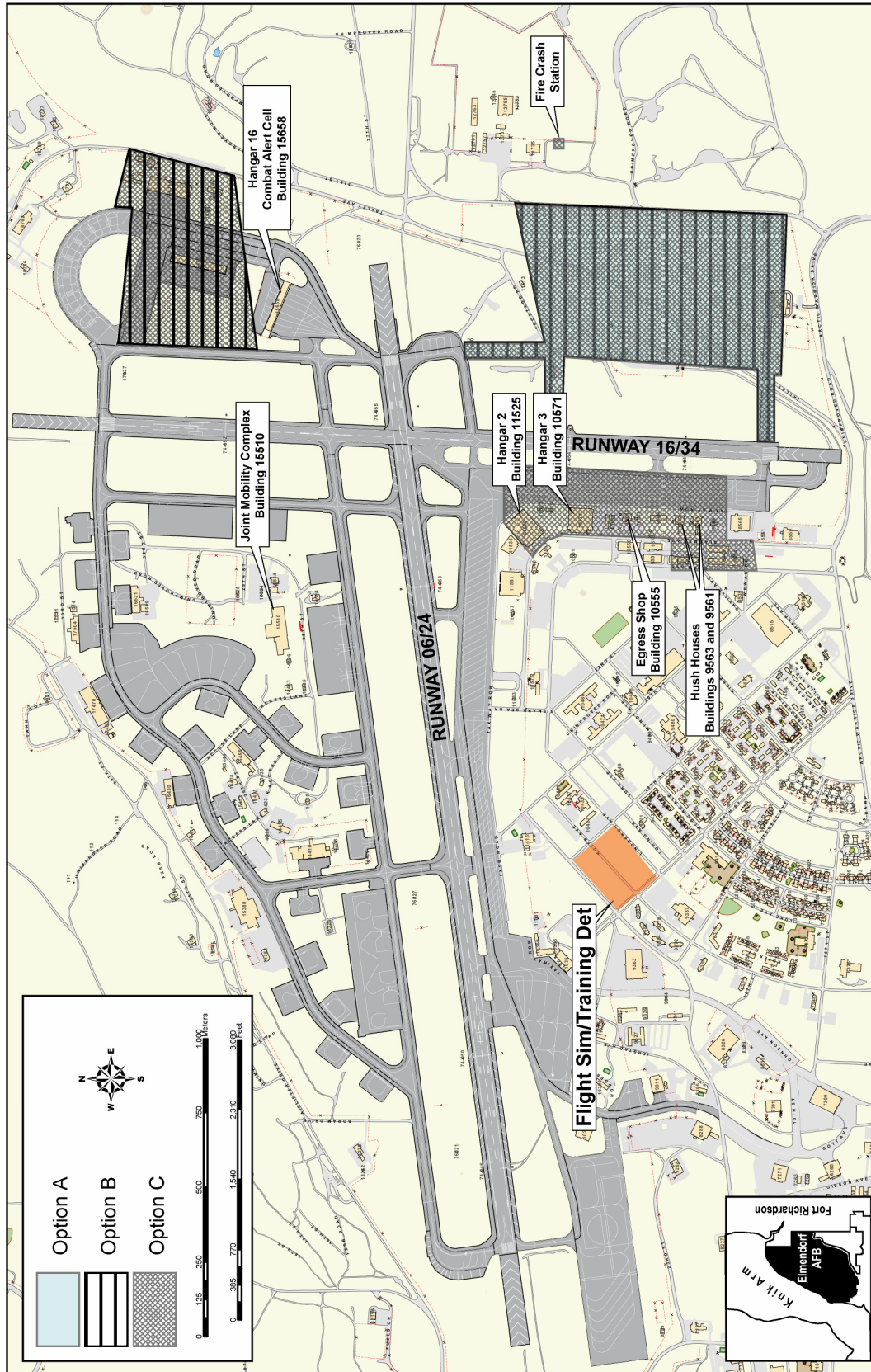


FIGURE 1.1-1. OPTIONAL DEVELOPMENT AREAS

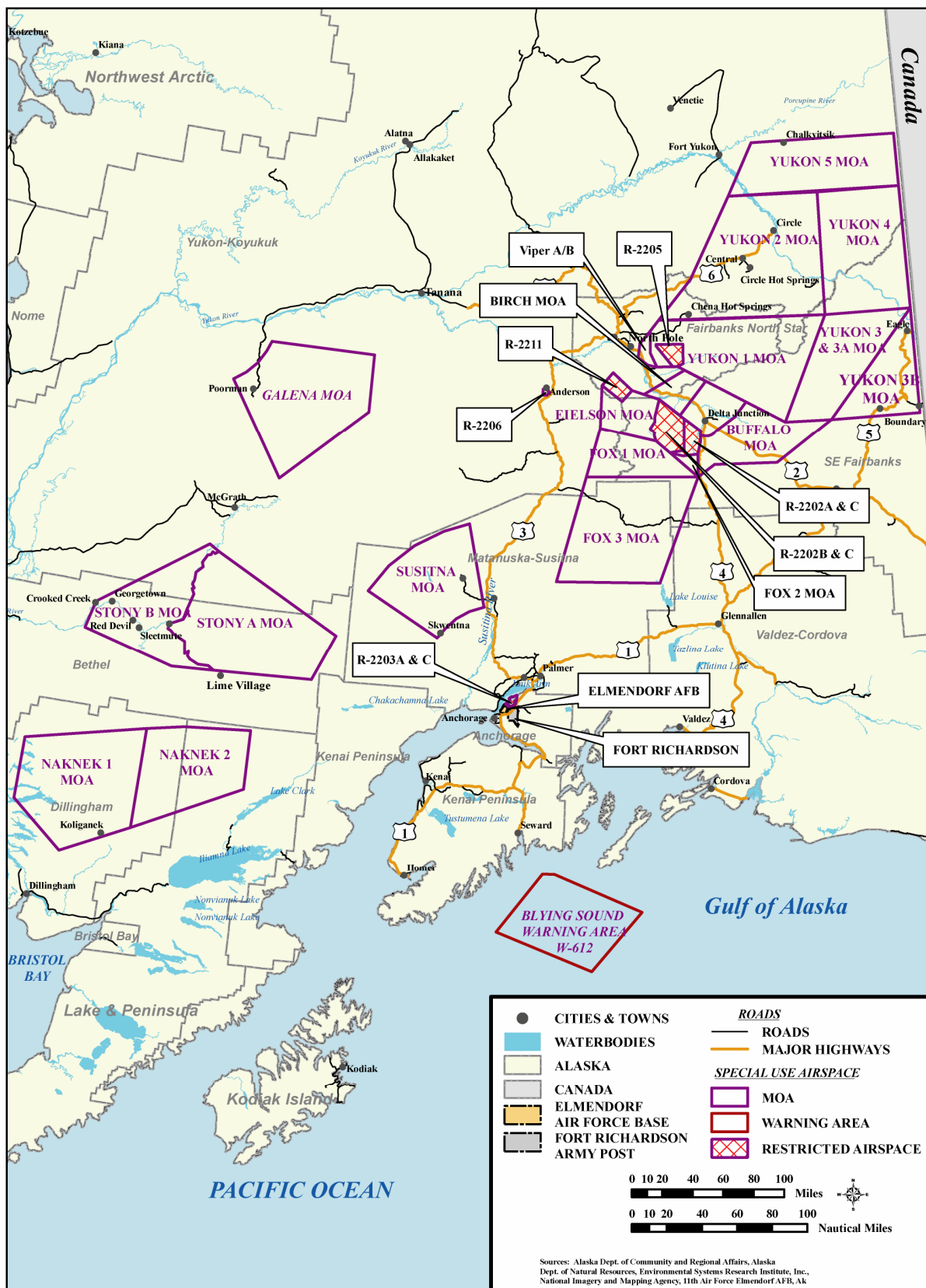


FIGURE 1.1-2. TRAINING SPECIAL USE AIRSPACE

1.3 NEED FOR SECOND F-22A OPERATIONAL WING BEDDOWN

The Air Force must establish Operational F-22A Wings that fulfill the F-22A's essential air dominance role in national defense.

Each F-22A Operational Wing must be combat-ready and able to perform its mission anywhere in the world at any time. The Second Operational Wing installation must meet the original selection criteria evaluated in the EIS for the location of the F-22 Initial Operational Wing; meet national needs for location with access to the Pacific Rim; and have the capacity at this time to beddown the Second F-22A Operational Wing. The need for an Operational F-22A Wing at Elmendorf AFB is the logical outgrowth of the F-22A development program described in Section 1.1.3.

1.3.1 NEED FOR ELMENDORF AFB F-22A OPERATIONAL WING BEDDOWN

In November 2001, the Air Force reviewed active Air Force F-15C squadron bases to identify bases that met the needs for beddown of an F-22A Operational Wing. Six bases were considered and five bases were evaluated in an EIS for the location of the F-22 Initial Operational Wing (Air Force 2001a). Since the November 2001 review, several factors have affected the alternative bases. Those factors have been included in considering the need to beddown the F-22A Second Operational Wing:

- Eglin AFB was selected as the location for F-35 Joint Strike Fighter pilot training of all Air Force, Navy, and Marine personnel as part of the Base Realignment and Closure Act (BRAC) of 2005. Eglin will have multiple new missions and does not meet the needs for an Operational Wing at this time.
- Elmendorf AFB is losing one squadron of F-15C air superiority aircraft and one squadron of F-15E air-to-ground aircraft as a result of BRAC decisions. Since World War II, Elmendorf AFB has provided an advanced location on U.S. soil for projection of U.S. global interests. Elmendorf AFB has F-15C and F-15E missions with the organizational structure and basic infrastructure communication links to support fighter aircraft. Elmendorf is the only remaining base from those originally evaluated which meets the needs for an F-22A Operational Wing at this time.
- Langley AFB was selected as the location for the Initial Operational Wing. Facilities have been constructed, and Initial Operating Capability was achieved on 15 December 2005 at Langley AFB. Langley AFB does not meet the need for a Second Operational Wing at this time.
- Mountain Home AFB is becoming the primary location for F-15E aircraft assets as a result of BRAC 2005. This includes F-15E aircraft from Elmendorf AFB. These additional missions mean that Mountain Home AFB does not meet the needs for an F-22A Operational Wing at this time.
- Nellis AFB continues to have unique FDE requirements for one squadron of F-22A and two proposed F-35 squadrons to support testing, training, and weapons system evaluation. Nellis missions mean that it does not meet the needs for an Operational Wing at this time.

- Tyndall AFB has received a training squadron of F-22A aircraft for pilot training and to support weapons delivery activity in Warning Areas and over-water ranges in the Gulf of Mexico. It would be beneficial to Air Force missions to not concentrate most of the next generation air superiority assets at one location at this time.

Of the original bases with F-15C operational air superiority aircraft, missions, and training airspace, Elmendorf AFB is the only base which meets the original selection criteria for an Operational Wing beddown, meets national needs for location, and has the capacity at this time to beddown the Second F-22A Operational Wing.

The ultimate goal of the F-22A development and operational deployment process is to provide the Air Force with a proven, tested aircraft, as well as with tactics and operational guidance to meet mission requirements. The Initial Operational Wing is currently being established at Langley AFB, Virginia. The proposed beddown of the Second F-22A Operational Wing, as analyzed in this EA, represents the second operational step in providing these needed F-22A units.



ELMENDORF AFB EXPERIENCE WITH OPERATIONAL SQUADRONS OF BOTH THE AIR SUPERIORITY F-15C AND PRIMARILY AIR-TO-GROUND F-15E PROVIDES NEEDED CAPABILITIES TO COORDINATE THE MULTROLE F-22A OPERATIONAL SQUADRONS.



THE ELEVENTH AIR FORCE HAS BROAD NATIONAL DEFENSE RESPONSIBILITIES.
THE 3 WG INCLUDES THREE FIGHTER SQUADRONS AND AN EXTENSIVE SUPPORT TEAM